REMARKS

Applicants thank the Examiner for the courtesy extended to Applicants' attorney during the interview held May 17, 2006, in the above-identified application. During the interview, Applicants' attorney explained the presently-claimed invention and why it is patentable over the applied prior art, and discussed other issues raised in the Office Action. The discussion is summarized and expanded upon below.

One embodiment of the present invention, as recited in Claim 1, is a diamond layer of single crystal CVD diamond which is colored and which has a thickness greater than 1 mm. Another embodiment, as recited in Claim 31, is a method for producing such a diamond layer, which includes the steps of providing a diamond substrate having a surface which is substantially free of crystal defects, providing a source of gas, dissociating the source gas to produce a synthesis atmosphere which contains 0.5 to 500 ppm nitrogen, calculated as molecular nitrogen, and allowing homoepitaxial diamond growth on the surface which is substantially free of crystal defects.

The rejection of Claims 1-30 and 37-40 under 35 U.S.C. § 102(b) as anticipated by or, in the alternative, under 35 U.S.C. § 103(a) as obvious over, U.S. 5,328,548 (Tsuji et al), is respectfully traversed.

In the previous response, Applicants explained why the single diamond crystals produced by the method disclosed by Tsuji et al were different from, and not suggestive of, the presently-claimed diamond layer and gemstones produced therefrom. Particularly, Applicants explained the difference between a single crystal CVD diamond and diamond produced by a high pressure and temperature process (HPHT), such as the process of Tsuji et al. Among other differences between the diamond layer herein and that of Tsuji et al are various optical properties.

In the Office Action, the Examiner suggests a Declaration showing these differences. During the above-referenced interview, the Examiner indicated that if a direct experimental comparison with Tsuji et al were not feasible, a Declaration explaining the differences, with suitable technological support, would be accepted, provided it were also explained why such a direct comparison is not feasible. To that end, the newly-submitted Scarsbrook Declaration addresses the Examiner's requirements.

Scarsbrook explains why such a direct comparison is not feasible, and then explains why such a comparison is neither necessary nor relevant to the present issues. Scarsbrook then goes on to explain the differences between HPHT diamond and CVD diamond and how the defects in HPHT diamond are different from those in CVD diamond, which defects influence the visible color of the diamond. Scarsbrook then particularly explains how the influence of nitrogen differs in HPHT diamond vis-a-vis CVD diamond. It is respectfully submitted that Applicants have sufficiently explained why the subject matter of the present claims is neither anticipated nor otherwise rendered unpatentable by Tsuji et al.

For all the above reasons, it is respectfully requested that the rejection over Tsuji et al be withdrawn.

The rejection of Claims 1-30 and 37-40 under 35 U.S.C. § 102(a) as anticipated by or, in the alternative, under 35 U.S.C. § 103(a) as obvious over, Yan et al, "Very high growth rate chemical vapor deposition of single-crystal diamond," in Proceedings of the Nat'l Academy of Sciences, Vol. 99, No. 20, pp. 12523-12525 (October 1, 2002) (Yan et al), is respectfully traversed.

As pointed out to the Examiner during the above-referenced interview, Applicants have already perfected priority by submitted the priority document, i.e., UK 0130004.5, filed December 14, 2001. The priority application is in English, and was filed on June 1, 2004.

Applicants respectfully request that the Examiner acknowledge such priority claim and receipt of the priority document in the next Office communication.

The Examiner should be able to ascertain that at least all the active claims except Claims 5-7, 14, 15, and 37-40 are supported by the priority application and thus, Yan et al is not prior art against these claims. In addition, the subject matter of claims not supported by the priority application is neither anticipated nor otherwise rendered unpatentable by Yan et al, for a more fundamental reason, as now discussed.

Claim 1 requires that the diamond layer have a **thickness** greater than 1 mm. The Examiner finds that a "thickness" can be of any dimension and therefore, as long as any dimension is greater than 1 mm, the claims are met. Particularly, the Examiner finds a synthetic diamond material can be oriented in any direction and that "any of the faces can be called the 'thickness'."

In reply, Applicants respectfully submit that the Examiner is incorrect. In general English usage, the term "thickness" refers to the smallest of three dimensions of an object. For example, Webster's English Dictionary defines thickness as "the smallest of three dimensions {length, width and ~}." See http://www.cs.chalmers.se/~hallgren/wget.cgi?thickness. Similarly, in Bookbinding and the Conservation of Books; A Dictionary of Descriptive Terminology (Matt T. Roberts and Don Etherington), "thickness" is defined as "the smallest of three dimensions of a material, such as leather or paper, usually expressed in thousandths of an inch, or, in the metric system, in millimeters." See http://palimpsest.stanford.edu/don/dt/dt3484.html.

While thickness has the above general definition, it has a similar definition in the present situation, i.e., materials produced by layered growth, particularly CVD processes as used herein, but also PVD (physical vapour deposition), and ALE (atomic layer deposition), i.e., the direction of growth is referred to as the thickness. This is so fundamental and well

accepted in the art that definitions to this effect are not easy to find, but references which assume it are common. See, e.g., http://en.wikipedia.org/wiki/Chemical_vapor_deposition, under the section Atomic Layer CVD). This is consistent with the above, as the processes generally are much less limited in their lateral extent than they are by the dimension (of thickness) in the direction of growth.

In addition to the above general and limited definitions, it is well-known that an applicant is entitled to be his own lexicographer. The specification herein uses the term "thickness" consistent with the above. Thus, page 8, first full paragraph describes defects in CVD diamond increasing "with growth thickness," relating thickness to the growth direction. Page 19, penultimate paragraph describes layers "grown to 1.7 mm thickness," clearly indicating that thickness of the CVD layer is in the growth direction. Page 32, first full paragraph describes dimensions of a substrate as being "5 mm × 5 mm and a thickness of 500 μm," providing further evidence of "thickness" as being the smallest dimension.

For all the above reasons, it is respectfully requested that the rejection over Yan et al be withdrawn.

The provisional rejection of Claims 1-30 and 37-40 under the judicially created doctrine of obviousness-type double patenting over Claims 52-61 of co-pending application no. 10/655,040 (co-pending application), is respectfully traversed. The Examiner is respectfully requested to hold this provisional rejection in abeyance until the present claims are found to be allowable but for this rejection. If, at that time, the co-pending application has not been allowed, then the present application should be allowed, and a non-provisional double patenting rejection made in the other application, if applicable. See M.P.E.P. 822.01. (Applicants do not concede that any such rejection would be applicable.)

For all the above reasons, it is respectfully requested that the provisional rejection be held in abeyance, if not withdrawn.

During the above-referenced interview, the Examiner presented cover and figure-containing pages from two documents--one by Evans and one by Collins--. The Examiner queries the units used in the claims, i.e., "nm" and how they relate to the units used in Evans, i.e., wavenumber in cm^{-1}, and in Collins, i.e., photon energy in eV. The Examiner indicated that he did not know where the Evans document was from.

Applicants now advise that the above two documents are well known to the applicants. The Evans document is from "The Properties of Natural and Synthetic Diamond" edited by J. E. Field, Published by Academic Press, ISBN 0-12-255352-7, which is a standard reference on diamond. The Collins document is from the Journal of Gemmology, Vol. 18, pages 37-92. These references entirely support the contents of the above-discussed Declaration.

Regarding the relationship of the various units, these can be summarized as follows:

nm = nanometers = wavelength λ

cm^{-1} = wavenumber = $1/\lambda$ where λ is in centimeters

eV = photon energy = hc/λ, where h is Planks constant (6.023×10^{23} J.s) and c is the speed of light (2.998×10^{8} m/s).

Simplified, this gives λ in nm = 1226.22/(energy in eV), thus 1 eV = 1226 nm.

Applicants respectfully submit that all of the presently-pending active claims in this application are in immediate condition for allowance. The Examiner is respectfully requested to rejoin nonelected claims of even scope, and in the absence of further grounds of rejection, pass this application to issue with all pending claims.

Respectfully submitted,

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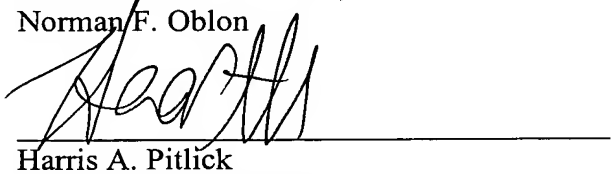

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